

Amendments to the Claims

A complete list of claims follows, with indicated amendments:

1. (Currently Amended) A multiple-node computer system comprising:
a plurality of nodes, wherein each node comprises
a processor operable to execute an operating system, and
a BIOS component operable to store a BIOS associated with the processor,
wherein the BIOS in a node may be synchronized with the BIOS of another node such that BIOS
coherence may be maintained between two or more nodes.
2. (Original) The multiple-node computer system of claim 1, wherein at least one
BIOS component is a flash BIOS.
3. (Original) The multiple-node computer system of claim 1, wherein each node
further comprises:
a memory device comprising a memory location operable to store data;
a scalability node controller coupled to the BIOS and the memory device; and
a scalable port switch, wherein each scalable port switch in the multiple-node
computer system is coupled to each scalability node controller in the multiple-node computer
system.
4. (Original) The multiple-node computer system of claim 3, wherein the states of
the scalable port switches may be changed such that the nodes may be configured as a partitioned

system such that each node is logically distinct, or an aggregated system, such that all of the nodes are logically a single system.

5. (Currently Amended) The multiple-node computer system of claim 4, wherein a first processor located within a logical system and associated with a first BIOS may be designated as a system ~~bootstrapping~~ bootstrap processor (~~SBSP~~), wherein the ~~SBSP~~ system bootstrap processor is operable to compare the first BIOS to a second BIOS associated with a second processor located within the logical system to determine a most current version of BIOS and store the most current version of BIOS in the memory location such that all of the processors in the logical system may be associated with the most current version of BIOS; and

wherein the logical system is a single node if the multiple-node computer system is a partitioned system or the logical system includes all of the nodes in the multiple-node computer system if the multiple-node computer system is an aggregated system.

6. (Original) The multiple-node computer system of claim 5, wherein each node further comprises a server I/O hub, wherein each server I/O hub is coupled to each scalable port switch in the multiple-node computer system.

7. (Original) The multiple-node computer system of claim 6, wherein each node further comprises an I/O controller hub, wherein each I/O controller hub is coupled to a server I/O hub located within the same node as the I/O controller hub.

8. (Currently Amended) The multiple-node system of claim 5, wherein each node further comprises a PCI hub operable to coupled devices to the multiple-node system-, wherein each PCI hub is coupled to a server I/O hub located within the same node.

9. (Original) The multiple node computer system of claim 1, wherein the computer system is a virtual multiple-processor system.

10. (Currently Amended) The multiple-node computer system of claim 9, further comprising a computer network, wherein ~~at~~ a first node is coupled to a second node across the computer network.

11. (Original) The multiple-node computer system of claim 10, wherein the computer network is a wide area network (WAN).

12. (Cancelled).

13. (Cancelled).

14. (Currently Amended) ~~The method of claim 13,~~ A method of synchronizing a plurality of BIOS for an aggregated multiple-node computer system comprising a plurality of processors, wherein each processor is associated with a BIOS, comprising the steps of:
determining the most current version of BIOS, wherein the step of determining the most current version of BIOS further comprises the steps of:

selecting a system bootstrap processor associated with a first BIOS,
wherein the system bootstrap processor is a processor in the system;

placing a copy of the first BIOS in a memory location; and

comparing the first BIOS to a BIOS associated with an application
processor to determine which BIOS is the most current version of BIOS, wherein the application
processor is a processor in the system that has not been selected as the system bootstrap
processor; and

synchronizing each BIOS with the most current version of BIOS, wherein the step
of synchronizing each BIOS with the most current version of BIOS further comprises the steps
of:

updating the BIOS associated with the AP application processor with the
copy of the first BIOS stored in memory if the first BIOS is more current than the BIOS
associated with the AP application processor; and

updating the BIOS associated with the SBSP system bootstrap processor
with a copy of the BIOS associated with the AP application processor if the BIOS associated
with the AP application processor is more current than the first BIOS.

15. (Currently Amended) The method of claim 14, wherein the step of updating the
BIOS associated with the SBSP system bootstrap processor further comprises the step of:

replacing the copy of the first BIOS in the memory location with a copy of the
BIOS associated with the AP application processor if the BIOS associated with the AP
application processor is more current than the first BIOS;

setting a new BIOS flag if the BIOS associated with the AP application processor is more current than the first BIOS;

setting a BIOS update flag if the BIOS associated with the AP application processor is more current than the first BIOS;

updating the first BIOS with the BIOS placed in memory if the new BIOS flag is set; and

resetting the system if the BIOS update flag is set.

16. (Cancelled).

17. (Cancelled).

18. (Currently Amended) ~~The method of claim 17,~~ A method of synchronizing a plurality of BIOS for a node of a partitioned multiple-node computer system, wherein the node comprises a plurality of processors, wherein each processor is associated with a BIOS, comprising the steps of:

determining the most current version of BIOS, wherein the step of determining the most current version of BIOS further comprises the steps of:

selecting a system bootstrap processor associated with a first BIOS, wherein the system bootstrap processor is a processor in the system;

placing a copy of the first BIOS in a memory location; and

comparing the first BIOS to a BIOS associated with an application processor to determine which BIOS is the most current version of BIOS, wherein the application

processor is a processor in the system that has not been selected as the system bootstrap processor; and

synchronizing each BIOS with the most current version of BIOS, wherein the step of synchronizing each BIOS with the most current version of BIOS further comprises the steps of:

updating the BIOS associated with the AP application processor with the copy of the first BIOS stored in memory if the first BIOS is more current than the BIOS associated with the AP application processor; and

updating the BIOS associated with the SBSP system bootstrap processor with a copy of the BIOS associated with the AP application processor if the BIOS associated with the AP application processor is more current than the first BIOS.

19. (Currently Amended) The method of claim 18, wherein the step of updating the BIOS associated with the SBSP system bootstrap processor further comprises the step of:

replacing the copy of the first BIOS in the memory location with a copy of the BIOS associated with the AP application processor if the BIOS associated with the AP application processor is more current than the first BIOS;

setting a new BIOS flag if the BIOS associated with the AP application processor is more current than the first BIOS;

setting a BIOS update flag if the BIOS associated with the AP application processor is more current than the first BIOS;

updating the first BIOS with the BIOS placed in memory if the new BIOS flag is set; and

resetting the system if the BIOS update flag is set.

20. (Currently Amended) A method of synchronizing a plurality of BIOS for a partitioned multiple-node computer system, wherein each node comprises a BIOS and a plurality of processors operable to execute an operating system ~~and at least one BIOS~~, wherein each processor is associated with a BIOS, comprising the steps of:

updating the BIOS for a selected node;

configuring the partitioned multiple-node computer system as an aggregated multiple-node computer system;

updating all of the nodes in the aggregated multiple-node computer system; and

restoring the multiple-node computer system to a partitioned multiple-node computer system.

21. (Currently Amended) The method of claim ~~21~~ 20 wherein the step of updating the BIOS for the selected node further comprises the steps of:

determining the most current version of BIOS for the selected node; and

synchronizing each BIOS in the selected node with the most current version of BIOS.

22. (Currently Amended) The method of claim 21 wherein the step of determining the most current version of BIOS for the selected node further comprises the steps of:

selecting a ~~SBSP~~ system bootstrap processor in the selected node associated with a first BIOS, wherein the ~~SBSP~~ system bootstrap processor is a processor in the selected node;

placing a copy of the first BIOS in a memory location; and

comparing the first BIOS to a BIOS associated with an AP application processor in the selected node to determine which BIOS is the most current version of BIOS, wherein the AP application processor is a processor in the selected node that has not been selected as the SBSP system bootstrap processor in the selected node.

23. (Currently Amended) ~~The method of claim 22,~~ A method of synchronizing a plurality of BIOS for a partitioned multiple-node computer system, wherein each node comprises a plurality of processors and at least one BIOS, wherein each processor is associated with a BIOS, comprising the steps of:

updating the BIOS for a selected node, wherein the step of updating the BIOS for the selected node further comprises the steps of:

determining the most current version of BIOS for the selected node,
wherein the step of determining the most current version of BIOS for the selected node further comprises the steps of:

selecting a system bootstrap processor in the selected node
associated with a first BIOS, wherein the system bootstrap processor is a processor in the selected node;

placing a copy of the first BIOS in a memory location; and

comparing the first BIOS to a BIOS associated with an application processor in the selected node to determine which BIOS is the most current version of BIOS,
wherein the application processor is a processor in the selected node that has not been selected as the system bootstrap processor in the selected node; and

synchronizing each BIOS in the selected node with the most current version of BIOS, wherein the step of synchronizing each BIOS in the selected node with the most current version of BIOS further comprises the steps of:

updating the BIOS associated with the AP application processor in the selected node with the copy of the first BIOS stored in memory if the first BIOS is more current than the BIOS associated with the AP application processor in the selected node; and

updating the BIOS associated with the SBSP system bootstrap processor in the selected node with a copy of the BIOS associated with the AP application processor in the selected node if the BIOS associated with the AP application processor in the selected node is more current than the first BIOS;

configuring the partitioned multiple-node computer system as an aggregated multiple-node computer system;

updating all of the nodes in the aggregated multiple-node computer system; and

restoring the multiple-node computer system to a partitioned multiple-node computer system.

24. (Currently Amended) The method of claim 23, wherein the step of updating the BIOS associated with the SBSP system bootstrap processor in the selected node further comprises the step of:

replacing the copy of the first BIOS in the memory location with a copy of the BIOS associated with the AP application processor in the selected node if the BIOS associated with the AP application processor in the selected node is more current than the first BIOS;

setting a new BIOS flag if the BIOS associated with the AP application processor in the selected node is more current than the first BIOS;

setting a BIOS update flag if the BIOS associated with the AP application processor in the selected node is more current than the first BIOS;

updating the first BIOS with the BIOS placed in memory if the new BIOS flag is set; and

resetting the system if the BIOS update flag is set.

25. (Original) The method of claim 24, wherein the step of configuring the partitioned multiple-node computer system as an aggregated multiple-node computer system further comprises the step of:

sending an all node BIOS flash synchronization request; and

configuring the partitioned multiple-node computer system as an aggregated multiple-node computer system in response to the all node BIOS flash synchronization request.

26. (Original) The method of claim 25 wherein the step of updating all of the nodes in the aggregated multiple-node computer system further comprises the steps of:

determining the most current version of BIOS for the aggregated multiple-node computer system; and

synchronizing each BIOS in the aggregated multiple-node computer system with the most current version of BIOS.

27. (Currently Amended) The method of claim 25 wherein the step of determining the most current version of BIOS for the aggregated multiple-node computer system further comprises the steps of:

placing a copy of the first BIOS in a memory location; and

comparing the first BIOS to a BIOS associated with an AP application processor in the aggregated multiple-node computer system to determine which BIOS is the most current version of BIOS, wherein the AP application processor is a processor in the aggregated multiple-node computer system that has not been selected as the SBSP system bootstrap processor.

28. (Currently Amended) The method of claim 27, wherein the step of synchronizing each BIOS in the aggregated multiple-node computer system with the most current version of BIOS further comprises the steps of:

updating the BIOS associated with the AP application processor in the aggregated multiple-node computer system with the copy of the first BIOS stored in memory if the first BIOS is more current than the BIOS associated with the AP application processor; and

updating the BIOS associated with the SBSP system bootstrap processor in the aggregated multiple-node computer system with a copy of the BIOS associated with the AP application processor if the BIOS associated with the AP application processor in the selected node is more current than the first BIOS.

29. (Currently Amended) The method of claim 28, wherein the step of updating the BIOS associated with the SBSP system bootstrap processor in the selected node further comprises the step of:

replacing the copy of the first BIOS in the memory location with a copy of the BIOS associated with the AP application processor in the aggregated multiple-node computer system if the BIOS associated with the AP application processor is more current than the first BIOS;

setting a new BIOS flag if the BIOS associated with the AP application processor is more current than the first BIOS;

setting a BIOS update flag if the BIOS associated with the AP application processor is more current than the first BIOS;

updating the first BIOS with the BIOS placed in memory if the new BIOS flag is set; and

resetting the system if the BIOS update flag is set.

30. (Currently Amended) ~~The method of claim 20,~~ A method of synchronizing a plurality of BIOS for a partitioned multiple-node computer system, wherein each node comprises a plurality of processors and at least one BIOS, wherein each processor is associated with a BIOS, comprising the steps of:

updating the BIOS for a selected node;

configuring the partitioned multiple-node computer system as an aggregated multiple-node computer system;

updating all of the nodes in the aggregated multiple-node computer system; and

restoring the multiple-node computer system to a partitioned multiple-node computer system, wherein the step of restoring the multiple-node computer system to a partitioned multiple-node computer system further comprises the step of:

sending an all BIOS synchronization finished status signal; and

restoring the multiple-node computer system to a partitioned multiple-node computer system in response to the all BIOS synchronization finished status signal.